Resource Action: EWG-106 **Task Force Recommendation Category:** 2

IMPLEMENT A COMPREHENSIVE MARKING/TAGGING PROGRAM AT THE FEATHER RIVER HATCHERY

Related Resource Actions:

- This resource action covers several marking/tagging related actions proposed by members of the Feather River Hatchery Technical Team.
- EWG-107, development of adaptive management plan for operations of the Feather River Hatchery.

1. Resource Action Description:

Develop and implement an appropriate marking/tagging program for all anadromous fish produced and released by the Feather River Hatchery (FRH). Tagging programs are essential to evaluating the effectiveness and impacts of hatchery operations. The FRH tagging program would rely on coded wire tags, otolith thermal marks, fin clips, and/or passive integrated tags. The specific attributes of the tagging program will be guided by: (1) the constant fractional marking program currently being developed by California Department of Fish Game (via CALFED contractors), (2) FRH objectives and issues identified through the FRH adaptive management program (EWG-107), (3) the need to provide statistically reliable estimates of FRH contribution to ocean/inland fisheries, out-of-basin straying, and spawning populations, (4) the need to provide visual identification of hatchery origin steelhead and spring-run Chinook, and (5) the need to provide statistically reliable estimates of proportions of wild, natural origin salmon and steelhead. This program would continue as long as the FRH is producing anadromous salmonids. The program would be subject to ongoing review by annual meetings of an interagency advisory committee, and would be subject to a thorough written review and critique every five years.

2. Project Nexus

Under the FERC license the FRH will continue to be a mitigation feature of the State Water Project's Oroville Facilities. Under the FERC agreement and through the ESA consultation process, the Department of Water Resources (DWR) may be required to better understand the impacts of hatchery (and project) on natural salmonid populations. Without the ability to distinguish hatchery fish from naturally spawning fish in the ocean and inland fisheries and on the spawning grounds with an acceptable degree of statistical reliability, it may not be possible to assess hatchery (or project) impacts on natural salmonid populations.

3. Potential Environmental Benefits

The ability to distinguish hatchery from naturally spawning fish will allow biologists and managers to better identify hatchery impacts and modify

operations to minimize adverse effects. A marking program is thus a critical part of the adaptive process that DWR and other resource agencies would need to integrate hatchery operations into an overall Central Valley salmon recovery and conservation program.

4. Potential Constraints

The major constraints are institutional and financial. Implementing this program would require critical review of potential tagging program attributes. Different approaches to tagging should be considered through an adaptive process including DWR staff and members of an interagency advisory team. The tagging program should be evaluated and recommendations made to modify the marking program as needed to meet data needs.

An appropriate program for tag recovery and analysis of resulting data would also be required. Staff for analysis and management of a tagging program will also be covered by EWG-107. The necessary recovery programs would be funded separately (and are already partially funded by DWR). It is not possible at this time to estimate the additional incremental costs for these recovery programs.

5. Existing Conditions

For about the past 10 years, a variable fraction of FRH salmon was coded wire tagged and adipose clipped, with the fraction generally 10 percent or less. Beginning with the 2001 cohort, all spring Chinook are being tagged and all steelhead are being adipose fin clipped (but not tagged). Prior to 1994 few FRH salmon were tagged.

6. Design Considerations

Other than determination and design of the sampling program itself, implementing this proposed action would also require some physical design considerations at the FRH. First, one must consider how the tagging operations are to be situated on the hatchery grounds. The existing tagging trailer would have to be evaluated to determine if it can meet the tagging needs of new program – both in terms of the numbers of fish to be tagged and the timing of the releases needed to meet experimental and operational goals. Plumbing, electrical and fish holding needs must be considered in this evaluation. Hatchery raceways would need modifications to have sufficient flexibility to segregate groups of tagged fish. Also, a more permanent tag sample storage facility should be considered. An alternate strategy would be to establish an affiliate tag processing lab at the FRH where samples from the Feather and perhaps Yuba Rivers could be stored, the tags extracted and the tags decoded.

7. Synergism and Conflicts

This action is synergistic with all actions designed to make operation of the FRH more environmentally sensitive, while still meeting DWR's mitigation responsibilities for construction and operation of the Oroville complex. There are no apparent conflicts with other proposed resource actions or existing hatchery operations.

8. Uncertainties

Given the adaptive nature of the proposed program the structure of the final program is uncertain. However, the program would be consistent with the goals identified earlier in the Resource Action Description.

The decision making process for the advisory team and the adaptive management component of this program has not been established. However, decision making practices for this effort will follow protocols established for other adaptive management programs that will be developed as part of the relicensing settlement.

9. Cost Estimate

Environmental Scientist staff time would be required to perform the necessary review, data analysis, report writing and coordination. We expect that this staff time would amount to approximately $60,000 annually (this estimate does not include time of existing DFG hatchery staff). Costs of the tagging program itself are difficult to estimate given the proposed adaptive development of the tagging program. However, if coded wire tag constant fractional marking program were to be implemented we could expect tagging costs to be approximately $800,000 per year. This assumes tagging about 5 million smolts at a cost of 16 cents per tag (tag purchase plus application) and assumes that the existing tagging trailer and contracting process are adequate. Additional equipment (e.g. tag injectors) required to place the tags can be expected to cost an additional $50,000 per year. These costs would occur annually for as long as the FRH continues to produce anadromous salmonids.

10. Recommendations

Development of marking/tagging program that meets program objectives is essential to future operation and management of the FRH.